

SYSTEMATIC NOTES ON *OLEANDRA*

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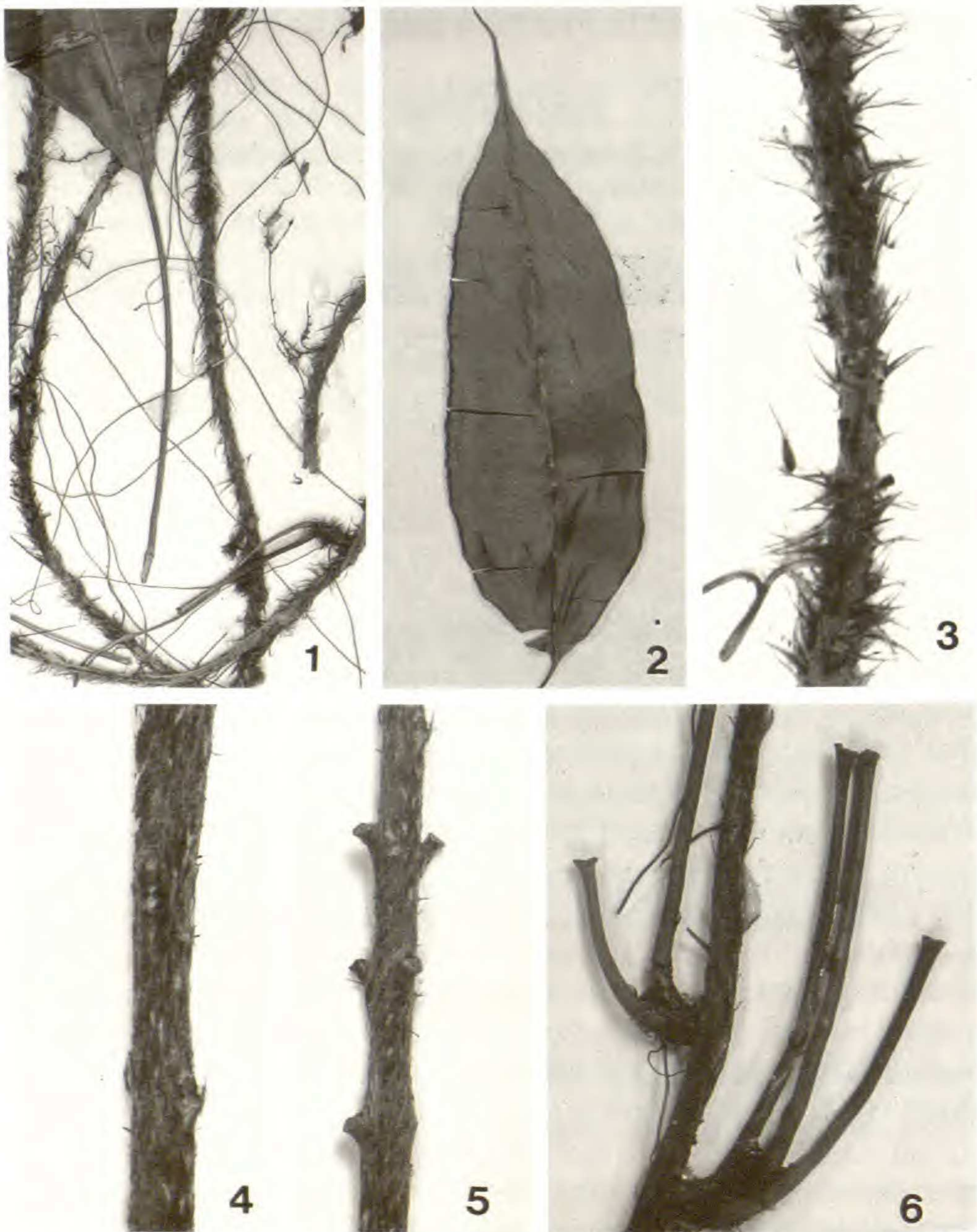
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ABSTRACT. A classification of the American species of the tropical fern genus *Oleandra* is presented along with a review of previous work on the genus. This treatment contrasts with earlier work by reduction of a number of taxa that have been based on variable species. The American species are reduced to four; those that occur in Africa, Asia, and Pacific islands are also briefly noted.

Key Words: tropical, Oleandraceae, *Oleandra*, fern

Oleandra is one of the most distinctive of fern genera although its taxonomic position is uncertain. Hooker (1840 t. 45B) regarded it as "a highly beautiful and very natural genus"; somewhat later Greville (1848) reported that "The genus *Oleandra* of Cavanilles . . . is one of the most natural in habit of the families of ferns, and not less beautiful than well defined." The most distinctive features, although initially reported on meager material, still characterize the genus. These are long, branched roots or rhizophores (Figure 1), a simple, entire lamina (Figure 2) borne on an articulate petiole, and peltate stem scales. In addition, some species have a shrubby growth habit and, with the possible exception of *O. vulpina* C. Chr., all species have indusiate sori. Much later, Ogura (1938) stated, in an anatomical and morphological study, that ". . . the genus *Oleandra* stands far remote from other ferns and may be in an isolated phyletic position." Christensen (1938) recognized this distinctiveness by placing the genus in its own subfamily of the Polypodiaceae. Pichi-Sermolli (1965) treated the genus in its own family related to elements in the Davalliaceae and perhaps also to the Aspidiaceae (Dryopteridaceae).

In contrast, many authors have commented on the need for a clear definition of the species. For example, Kramer (1990) has stated that "Many species are similar in appearance, and a modern monograph is required." Palacios-Rios (1995) has noted, "El genero necesita un estudio monografico ya que han sido descritas muchas especies basandose y muy pocos ejemplares," and Smith



Figures 1-6. Morphological characters of *Oleandra*. 1. Long roots or rhizophores, *O. articulata*, Venezuela, Maguire & Politi 27755 (MO), $\times \frac{1}{2}$. 2. Small lamina, *O. articulata*, Venezuela, Maguire & Politi 27755 (MO), $\times \frac{1}{2}$. 3. Stem with patent scales, *O. articulata*, Bolivia, Gentry & Solomon 44519 (MO), $\times 2$. 4. Stem with appressed scales, *O. pilosa*, van der Werff & Rivero 7849 (MO), $\times 2$. 5. Short phyllopodia on stem, *O. pilosa*, van der Werff & Rivero 7849 (MO), $\times 1 \frac{1}{2}$. 6. Long phyllopodia (3 to right and 1 to far left), *O. Lehmannii*, Colombia, Betancur et al. 881 (MO), $\times 1 \frac{1}{2}$.

(1995) stated "The New World species are badly in need of a modern monograph."

The principal authors of new species or new combinations have been Ching, Copeland, Kunze, Maxon, and Presl. These, as well as others, have attempted to work toward a realistic classification of the species, but generally have been hampered by a lack of a complete monographic treatment. They likely hoped that future collections would verify the taxonomy that was provided. However, the taxonomic history of the genus has been as Palacios-Rios (1995) noted: too many species and too few specimens.

It is emphasized here that individual plants are placed in the same taxon because they share certain characters. Differences, especially at the level of genus and below, also concern the rank of a taxon. Which characters represent significant differences, as well as which characters are shared, needs to be evaluated.

Some authors have distinguished taxa on variable characters. For example, Maxon (1914), noted for his careful work, had too few specimens for his study of American *Oleandra* and his treatment provided no guidance concerning the variability of characters. The studies of Pichi-Sermolli (1965), based on African material in many herbaria, led to the conclusion that, in *O. distenta*, characters such as pilosity of the lamina, the costa, the petiole, and the indusium, as well as characters of the costa scales, are variable.

Field studies are needed in order to understand the stability and variability of characters within populations, and also the stage of development at which useful herbarium material should be collected. Such studies may provide evidence for recognition of additional taxa.

Here the American species have been reduced in number based on the comments in previous treatments, and on the basis of ample collections. Types that have been seen are indicated by affirmation (!). The taxonomy of species that occur beyond the American tropics has not been evaluated.

Oleandra Cav., Anal. Hist. Nat. 1: 115. 1799. Type and sole species: *Oleandra neriformis* Cav. corrected by Swartz (1806) to *neriiformis*. The species name is valid from the publication in 1799 (Tokyo Code, Art. 42.1 in Greuter et al. 1994).

Neuronia Don, Prod. Fl. Nepal. 6. 1825. Type and sole species: *Neuronia asplenioides* Don.

Ophiopteris Reinw., Syll. Pl. Nov. 2: 3. 1825. Type and sole species: *Ophiopteris verticillata* Reinw. The journal, published by the Soc. Ratisbona, was also cited as Regensburg Bot. Zeit. or other variations of the title. The first few pages of volume two were published late in 1825 or early in 1826, rather than 1828 as indicated on the cover.

Aspidium subgenus *Oleandra* (Cav.) Splitg., Tijds. Nat. Gesch. 7: 411. 1848.

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1. Epiphytic; stem flexible, twining, with or without a whitish deposit, usually bearing many scales with the portion beyond the point of attachment patent or nearly so (Figure 3); phyllopodium (petiole below the joint) usually 6–30 mm long (2)
2. Stem brown, lacking a whitish deposit; the scales usually concealing the stem; widespread in tropical America 1. *O. articulata*
2. Stem, at least partially, with a whitish deposit; scales usually sparse; Costa Rica 2. *O. Bradei*
1. Terrestrial or epiphytic; stem rigid, and usually erect, rarely with some whitish deposit, bearing many scales that are fully and closely appressed (Figure 4); phyllopodia absent or to 30 mm long (3)
3. All or most phyllopodia on a stem 1–5 mm long (Figure 5), or absent; Costa Rica and Panama, Trinidad, the Guianas, west to Colombia and south to Bolivia and in Amazonian Brazil 3. *O. pilosa*
3. All or most phyllopodia on a stem 6–30 mm long (Figure 6); Haiti, Guatemala, Venezuela and Colombia, south to Peru 4. *O. Lehmannii*

1. *Oleandra articulata* (Sw.) Presl, Tent. Pterid. 78. 1836.

Aspidium articulatum Sw., Jour. Bot. (Schrader) 1800 (2): 30. 1801, not Willd. 1810. HOLOTYPE: Martinique, Plumier, Traité Foug. Amér. t. 136.

Polypodium articulatum (Sw.) Poir., in Lam. Encycl. 5: 514. 1804.

Polypodium articulatum Vahl, Eclog. Amer. 3: 51. 1807. LECTOTYPE (designated here): Montserrat, Ryan (C, photo A).

Aspidium nodosum Willd., Sp. Pl. ed. 4, 5: 211. 1810. *nom. superfl.* for *Aspidium articulatum* Sw. and with the same type.

Hypopeltis articulata (Sw.) Bory, in Bélan. Voy., Bot. 264. 1833.

- Oleandra nodosa* Presl, Tent. Pterid. 78. 1836, *nom. nov.* for *Aspidium nodosum* Willd. and with the same type.
- Oleandra hirta* Brack., U. S. Explor. Exped. (Wilkes) 16: 214. t. 29. 1854. HOLOTYPE: BRAZIL. Organ mountains, Rio de Janeiro (Guanabara), *U. S. Explor. Exped.* 2 (US!; ISOTYPE: K, photo GH).
- Oleandra neriiformis* var. *hirta* (Brack.) Baker, Fl. Brasil. 1 (2): 495. 1870.
- Oleandra nodosa* var. *Magalhaesii* Christ, Bull. Herb. Boiss. II, 2: 236. 1902, as *Magalhaesi*. HOLOTYPE: BRAZIL. Serra do Itatiaia, *Magalhães Gomes* 2259, (Herb. Christ, P).
- Oleandra Baetae* Damazio, Bull. Herb. Boiss. II, 6: 892. 1906. HOLOTYPE: BRAZIL. Serra do Frasaò, Minas Geraes, *A. Baeta* (EM).
- Oleandra articulata* f. *eglandulosa* Domin, Pterid. Dominica 233. 1929. HOLOTYPE: Dominica, *Eggers* 1036 (K). [PARATYPES: all Dominica, *Imray* (K), *Eggers* 756 (K), *Nichols* 253 (K)].
- Oleandra zapatana* Lell. Proc. Biol. Soc. Wash. 89: 719, f. 3. 1977. TYPES: COLOMBIA. Chocó, *Lellinger & de la Sota* 300 (HOLOTYPE: US!, photo GH; ISOTYPES: COL, LP). [PARATYPE: Colombia, Chocó, *Lellinger & de la Sota* 195 (US!; ISOPARATYPE: LP)].

The citation of the type of *Oleandra articulata* by Maxon (1914) was disputed by Morton (1968), but was maintained by Joncheere (1969). I agree with the original typification and use the basionym of Swartz for the species of the West Indies and elsewhere in tropical America.

In the West Indies this species is rather uniform with a long (usually 45 cm or more), broadly to narrowly elliptical lamina and scattered sori. It sometimes has a pubescent lamina, especially in southeastern Brazil. The scales on the stem are rarely sparse, as in *Dudley* 13243, GH.

The stem of *Oleandra hirta* was described as glaucous, but this character was not evident on the holotype.

Oleandra articulata ranges from Cuba and other of the Greater Antilles through the Lesser Antilles to Trinidad; from southern Mexico and British Honduras (Belize) to Panama; and from the Guianas west to Colombia and south to Bolivia; also Brazil, especially the southeast.

2. ***Oleandra Bradei*** Christ, Bull. Soc. Bot. Genève II, 1: 231. 1909. HOLOTYPE: COSTA RICA. La Palma, *C. Brade* 17, III, 1908 (Herb. Christ, P). The type of var. *caudata* was also cited.

Oleandra nodosa var. *caudata* Christ, Bull. Herb. Boiss. II, 4: 964. 1904. HOLOTYPE: COSTA RICA. Haut Uren, Talamanca, *Pittier* 12699 (Herb. Christ, P).

The type of *Oleandra Bradei* is cited from the original publication. Scamman (1961) used the type of the variety, which Christ also cited with the species. The white deposit on the stem, emphasized by Maxon (1914), was not mentioned in the description of the variety.

Oleandra Bradei is confined to Costa Rica; it may well be a variant of *O. articulata*. There seems to be little reason for its recognition as a species. It is frequently collected and the numerous specimens may overemphasize its significance.

3. ***Oleandra pilosa*** Hook., Gen. Fil. t. 45B and text. 1840. HOLOTYPE: BRITISH GUIANA (GUAYANA). Berbice, *Schomburgk 416* (K, photo GH; ISOTYPE: L).

Aspidium pendulum Splitg., Tijds. Nat. Gesch. 7: 412. 1840, not Raddi, 1819. LECTOTYPE (designated here): SURINAM. Berlijn plantation, Para, *Splitgerber* (L, photo GH; ISOLECTOTYPE: K).

Oleandra micans Kunze Bot. Zeitung (Berlin) 9: 346. 1851. LECTOTYPE (designated here): "ad Mission. Tocache, flor. Huallaga superior, Peruviae. Sterile lectum Jul. Aug. 1830, (Diar. 1958)" (from Kunze 1834), Herb. *Poeppig*, Kunze, destroyed at LZ.

Oleandra trujillesis Karst., Fl. Columb. 1: 147, t. 73. 1861. HOLOTYPE: VENEZUELA. Near Escuque, *Karsten*.

Oleandra neriiformis var. *pilosa* (Hook.) Baker, Fl. Brasil. 1 (2): 494. 1870.

Oleandra decurrens Maxon, Contrib. U. S. Natl. Herb. 17: 396. 1914. HOLOTYPE: COSTA RICA. El General, *Pittier 10649* (US!).

Oleandra panamensis Maxon, Contrib. U. S. Natl. Herb. 17: 396. 1914. HOLOTYPE: PANAMA. Chiriqui, *Pittier 5322* (US!).

Oleandra trinitensis Maxon, Contrib. U. S. Natl. Herb. 17: 397. 1914. HOLOTYPE: TRINIDAD, *Fendler 114* (US!; ISOTYPE: US!, GH!, K, photo GH). [PARATYPE: Bot. Gard. Trinidad 333 (US!, 2 sheets; ISOPARATYPE: GH!, K, photo GH)].

Oleandra dura Maxon, Amer. Fern J. 35: 21. 1945. HOLOTYPE: COLOMBIA. Santander, *Haught 1329* (US!; ISOTYPE: GH!, K, photo GH).

The holotype of *Oleandra micans*, very briefly described, was destroyed at Leipzig and no other type has been located. Mettenius (1856) used the name and supplied a description for *Lechler 2539* (B!, K!) from Tatanara, Peru. In Herb. Mett. (B!) there is a pencil tracing of the sterile lectotype.

Oleandra pilosa has an extensive range from Costa Rica and Panama south to Bolivia, also in Trinidad and the Guianas, Venezuela and Amazonian Brazil.

4. ***Oleandra Lehmannii*** Maxon, Contrib. U. S. Natl. Herb. 17:

395. 1914. HOLOTYPE: COLOMBIA. Amalfi, *Lehman XLII* (US!; ISOTYPE: K, photo GH).

Oleandra guatemalensis Maxon, Contrib. U. S. Natl. Herb. 17: 395. 1914. HOLOTYPE: GUATEMALA. Alta Verapaz, *Maxon & Hay 3333* (US!).

Oleandra costaricensis Maxon, Contrib. U. S. Natl. Herb. 17: 397. 1914. HOLOTYPE: COSTA RICA. La Palma, *Tonduz 12551* (US!).

Oleandra Urbanii Brause, Ark. Bot. 17: 68. 1921. HOLOTYPE: Haiti, *Ekman 547* (B).

Oleandra duidae A. C. Sm., Bull. Torrey Bot. Club 58: 301. 1931. HOLOTYPE: VENEZUELA. Mount Duida, *Tate 580* (NY).

Oleandra trinitensis var. *subcostaricensis* Süsseng. & Losch, Mitt. Bot. Staatssamml. München 1: 23. 1950. HOLOTYPE: COSTA RICA. Turrialba, *Kupper 1613* (M).

Oleandra Archeri Maxon, Amer. Fern J. 24: 74. 1934. HOLOTYPE: COLOMBIA. Chocó, *Archer 1669* (US!).

Oleandra Lehmannii is selected over other available names because it is used most often. The type of the briefly described var. *subcostaricensis* has not been seen; it is placed here solely because of the epithet. *Oleandra Urbanii* was published in November, 1921, although the cover of the volume is dated 1922.

The species ranges from Guatemala to Panama and from Venezuela to Colombia, south to Peru, and in Haiti.

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Pichi-Sermolli (1965) has discussed in some detail the species of Africa and adjacent islands. He notes that "A more abundant material than I have had at my disposal will perhaps lead us in the future to a re-arrangement of the African species, but for the time being I recognize the following species." These are: *Oleandra Anettii* Tard. (West Tropical Africa), *O. distenta* Kunze (Tropical and South Africa), *O. ejurana* Adams (Ghana), *O. madagascarica* Bonap. (Madagascar), and *O. Welwitschii* (Baker) Pichi-Sermolli (Angola, Congo, not *Welwitzchii* as originally published). Ample material of the species recognized by Pichi-Sermolli (except for *O. distenta* and probably *O. madagascarica*) is needed to confirm their taxonomic status. Kornaś (1977), on the basis of material from Zambia, has treated *O. Welwitschii* as a variety of *O. distenta*; however, the nomenclature is not correct.

ASIAN AND PACIFIC SPECIES

There are perhaps 40 species currently recognized in this vast region. A satisfactory classification of the species is not possible until more extensive collections are examined and types have been studied. In several studies of Chinese species about ten species are recognized. Only two are treated in the work on Java by Posthumus (1937). In this treatment seven are reduced to *Oleandra neriiformis* Cav. and four to *O. musifolia* (Bl.) Presl. Nine species, six of them endemics, are treated by Copeland in his work on the Philippine ferns (1958). Seven species are included in his New Guinea studies (1940) and three are considered endemic. Several species in the Asian and Pacific regions evidently have distinctive characters: *Oleandra Cumingii* J. Smith (not a nom. nud. as often indicated) has stems creeping; *O. pistillaris* (Sw.) C. Chr. has stems rigid, erect and shrublike; *O. Wallichii* (Hook.) Presl has patent stem scales; in *O. neriiformis* Cav. the scales are fully appressed and sori are arranged in two rows close to the costa; *O. Sibbaldii* Grev. has sori more or less scattered. Among the New Guinea species *O. Wernerii* Ros. is recognized by its dimorphic leaves, and *O. vulpina* C. Chr. by the exindusiate condition, if this is truly so.

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